

## FUTURE FISHERIES IMPROVEMENT PROGRAM GRANT APPLICATION

Please fill in the highlighted areas  
*all sections (IA, IB, IC, etc.) must be addressed or the application will be considered invalid*

### I. APPLICANT INFORMATION

- A. Applicant Name: Trout Unlimited
- B. Mailing Address: 312 N. Higgins Ave. Suite 200
- C. City: Missoula State: MT Zip: 59802
- Telephone: (406) 218-8635 E-mail: [pparson@tu.org](mailto:pparson@tu.org)
- D. Contact Person: Paul Parson
- Address if different from Applicant: \_\_\_\_\_
- City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- Telephone: \_\_\_\_\_ E-mail: \_\_\_\_\_
- E. Landowner and/or Lessee Name (if other than Applicant): Lolo National Forest
- Mailing Address: 209 Riverside Ave W.
- City: Superior State: MT Zip: 59872
- Telephone: (406) 822-4233 E-mail: [jrhanson@fs.fed.us](mailto:jrhanson@fs.fed.us)

### II. PROJECT INFORMATION\*

- A. Project Name: Cedar Creek Large Woody Debris Project
- River, stream, or lake: Cedar Creek
- Location: Township: 16 N Range: 27 W Section: 13
- Latitude: 47.147766° Longitude: -114.941724° *within project (decimal degrees)*
- County: Mineral
- B. Purpose of Project:
- The purpose of the project is to improve the fishery in Cedar Creek through the installation of large wood structures, relocation of 1,160 feet of road away from the stream and construction of vegetated stream bank and floodplain.
- C. Brief Project Description: \_\_\_\_\_

## Cedar Creek large woody debris

Cedar Creek flows northeast from the Idaho/Montana state line for approximately 20 miles before flowing into the middle Clark Fork River. The high elevation and abundant precipitation in the headwaters maintain cold stream temperatures throughout the summer and fall, a key component for resident and fluvial bull trout. The stream has a long history of placer mining, and as a result, much of the riparian corridor is in a disturbed state. In conjunction with placer mining a stream adjacent railroad was constructed to facilitate transport of goods, and then riparian bottom roads were constructed and remain actively used. Habitat within this drainage has been heavily impacted by these activities causing confinement of the stream channel, limiting its natural ability to meander, as well as increased sedimentation, lack of large woody debris that creates fish habitat, and loss of riparian vegetation that stabilizes streambanks and provides shade to cool water temperatures.

Cedar Creek is listed as a Priority Bull Trout Watershed by the Forest Service and was designated as core bull trout habitat by the Montana Bull Trout Scientific Group. The Conservation Strategy for Bull Trout on USFS lands in Western Montana (2013) and the USFWS Bull Trout Recovery Plan (2015) points out that removing riparian roads, improving pool conditions, and restoring mining claims are important activities to improve populations.

Fish populations within Cedar Creek include primarily native westslope cutthroat trout and bull trout. Mountain whitefish (*Prosopium williamsoni*) have also been documented along with a handful of brown trout (*Salmo trutta*) in lower Cedar Creek, and eastern brook trout (*Salvelinus fontinalis*) found in upper Oregon Gulch. Within the Middle Clark Fork, Cedar Creek is unusual in that native bull trout and westslope cutthroat dominate the population and nonnative species are rare in abundance and distribution throughout the watershed. The lack of nonnative competition and overlap with brook trout and brown trout is a noteworthy advantage for bull trout long-term viability.

In the summers of 2015 and 2017, phases 1 and 2 of the Cedar Creek project relocated 1 mile of stream adjacent road and placed 125 large wood structures in a two-mile reach of Cedar Creek. Work was completed between the mouth of Cayuse Creek and Oregon Gulch where over 10,000 c.y. of material was moved off the floodplain and 312 trees were utilized in LWD jams. Realigning the road and removing old placer mine piles reactivated large portions of the floodplain and created buffer strips between the road and stream.

For this third and final phase, the road relocation and floodplain creation with the addition of large wood structures will create pools, substrate sorting, complexity, and add meandering to the straightened channel over time. Primary benefits in the form of overwintering, spawning, and rearing habitat along with a connected floodplain are expected.

D. Length of stream or size of lake that will be treated: Large Wood Structures added to approximately 1 mile of stream.

E. Project Budget:

Grant Request (Dollars): \$ 28,660.00

Contribution by Applicant (Dollars): \$ 5,000 In-kind \$ 11,200  
(salaries of government employees are not considered as matching contributions)

Contribution from other Sources (Dollars): \$ 56,989.50 In-kind \$ 14,500  
(attach verification - See page 2 budget template)

**Total Project Cost: \$ 116,349.50**

- F. Attach itemized (line item) budget – see template

Attach **specific project plans, detailed sketches, plan views, photographs, maps, evidence of landowner consent, evidence of public support and fish biologist support, and/or other information necessary to evaluate the merits of the project. If project involves water leasing or water salvage complete a *supplemental questionnaire*** (fwp.mt.gov/habitat/futurefisheries/supplement2.doc).

- H. **Attach land management & maintenance plans that will ensure protection of the reclaimed area.**

### III. PROJECT BENEFITS\*

- A. What species of fish will benefit from this project?:

Fish populations within Cedar Creek include primarily native westslope cutthroat trout and bull trout. Mountain whitefish (*Prosopium williamsoni*) have also been documented.

- B. How will the project protect or enhance wild fish habitat?:

The project will enhance wild fish habitat through floodplain creation, revegetation and large wood structure installation. We propose to install approximately ten structures over a 1-mile reach of Cedar Creek.

- C. Will the project improve fish populations and/or fishing? To what extent?:

The floodplain creation, additional large wood, associated off-channel habitat and gravel sorting will greatly improve fish populations along this degraded reach of Cedar Creek. The spawning and rearing habitat is limited throughout the lower reach of stream and this project aims to improve spawning and rearing. Fishing will subsequently also improve with great access and proximity to the town of Superior.

- D. Will the project increase public fishing opportunity for wild fish and, if so, how?:

Yes. The project is approximately seven miles from the town of Superior and the confluence with the Clark Fork River. The improved habitat will improve the fishing in Cedar Creek. The stream is on public land and easily accessible for wade fishing.

- E. The project agreement includes a 20-year maintenance commitment. Please discuss your ability to meet this commitment.

The Lolo National Forest is committed to the success of these restoration projects with fisheries and hydrology staff.

TU has included post project maintenance in all reclamation plans for projects in the Cedar Creek drainage and has continued to monitor projects. TU has full time staff dedicated to project planning and these maintenance activities, including seasonal field technicians.

Additionally, project partners are committed to project monitoring to assess effectiveness. The project team has fisheries sampling locations setup in the project area and multiple monitoring stations. TU worked with the University of Montana College of Forestry to develop a Senior Capstone Course project for the Wildland Restoration program to focus on monitoring the ecological effects of this work on Cedar Creek.

- F. What was the cause of habitat degradation in the area of this project and how will the project correct the cause?:

## Cedar Creek large woody debris

The habitat degradation was caused by historic mining, a road built adjacent to the stream, straightening of the stream channel and removal of wood along the riparian corridor. By relocating the road away from the stream, creating vegetated stream bank and floodplain and adding large wood structures these affects from historic activities will be remedied.

G. What public benefits will be realized from this project?:

This project will improve water quality through sediment reduction and improved hydrology, which will directly benefit downstream water users and the community adjacent to the Lolo National Forest. Improved fishing will benefit anglers and improved wildlife habitat in the watershed for deer, elk, moose, grouse, water fowl and small game will improve public hunting

H. Will the project interfere with water or property rights of adjacent landowners? (explain):

No, the project will not interfere with water or property rights of adjacent landowners. The Forest Service is the landowner and the nearest private land is approximately 3 miles downstream.

I. Will the project result in the development of commercial recreational use on the site?: (explain):

No. Access to the stream is by foot only and commercialized recreation is not common in Cedar Creek.

J. Is this project associated with the reclamation of past mining activity?:

Yes, this reach of Cedar Creek was placer mined in the past. Additionally, the road that will be relocated to create floodplain and off-channel habitat is located on an old railroad bed that was built for mining operations.

**Each approved project applicant must enter into a written agreement with Montana Fish, Wildlife & Parks specifying terms and duration of the project. The applicant must obtain all applicable permits prior to project construction. A competitive bid process must be followed when using State funds.**

#### IV. AUTHORIZING STATEMENT

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature:



Date:

5/31/18

Sponsor (if applicable):

**\*Highlighted boxes will automatically expand.**

Cedar Creek large woody debris

**Mail To:** Montana Fish, Wildlife & Parks  
Fisheries Division  
PO Box 200701  
Helena, MT 59620-0701

**E-mail To:** Michelle McGree  
[mmcgree@mt.gov](mailto:mmcgree@mt.gov)  
(electronic submissions MUST be signed)

Incomplete or late applications will be rejected and returned to applicant.  
Applications may be rejected if this form is modified.

**\*\*\*Applications must be signed and *received* by the Future Fisheries Program Officer in Helena before December 1 and June 1 of each year to be considered for the subsequent funding period.\*\*\***



# Cedar Creek large woody debris

## BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

Both tables must be completed or the application will be returned

Donor tables must be completed if the application will be returned								
WORK ITEMS (ITEMIZE BY CATEGORY)	NUMBER OF UNITS	UNIT DESCRIPTION*	COST/UNIT	TOTAL COST	CONTRIBUTIONS			
					FUTURE FISHERIES REQUEST	IN-KIND SERVICES**	IN-KIND CASH	TOTAL
Personnel***								
Survey	20	hours	\$100.00	\$ 2,000.00			2,000.00	\$ 2,000.00
Design	40	hours	\$80.00	\$ 3,200.00		3,200.00		\$ 3,200.00
Wetland	20	hours	\$60.00	\$ 1,200.00			1,200.00	\$ 1,200.00
Permitting	20	hours	\$50.00	\$ 1,000.00			1,000.00	\$ 1,000.00
Oversight	100	hours	\$80.00	\$ 8,000.00		8,000.00		\$ 8,000.00
								\$ -
			Sub-Total	\$ 15,400.00	\$ -	\$ 11,200.00	\$ 4,200.00	\$ 15,400.00
Travel								
Mileage	3600	miles	\$0.57	\$ 2,052.00			2,052.00	\$ 2,052.00
Per diem	10	days	\$100.00	\$ 1,000.00			1,000.00	\$ 1,000.00
			Sub-Total	\$ 3,052.00	\$ -	\$ -	\$ 3,052.00	\$ 3,052.00
Construction Materials****								
Trees with Rootwads	120	each	\$100.00	\$ 12,000.00		12,000.00		\$ 12,000.00
Willow Cuttings	2500	each	\$1.00	\$ 2,500.00		2,500.00		\$ 2,500.00
Pit Run Aggregate	410	cy	\$25.00	\$ 10,250.00			10,250.00	\$ 10,250.00
24" Culvert	40	lf	\$22.50	\$ 900.00			900.00	\$ 900.00
Revegetation	350	each	\$6.50	\$ 2,275.00			2,275.00	\$ 2,275.00
Seeding	50	lb	\$13.25	\$ 662.50			662.50	\$ 662.50
				\$ -				\$ -
			Sub-Total	\$ 28,587.50	\$ -	\$ 14,500.00	\$ 14,087.50	\$ 28,587.50
Equipment and Labor								
Site Prep Tree Salvage - Excavator	40	hours	\$150.00	\$ 6,000.00			6,000.00	\$ 6,000.00
Site Prep-Dump Excavating and Grading Road	40	hours	\$100.00	\$ 4,000.00			4,000.00	\$ 4,000.00
Road Surface Grading	3300	cubic yards	\$4.50	\$ 14,850.00			14,850.00	\$ 14,850.00
Excavating and Grading Floodplain	1160	lf	\$5.00	\$ 5,800.00			5,800.00	\$ 5,800.00
Excavating Bank Construction Wood Structure	1.05	acres	\$3,200.00	\$ 3,360.00	3,360.00			\$ 3,360.00
Excavator	450	feet	\$10.00	\$ 4,500.00	4,500.00			\$ 4,500.00
Wood Structure	80	hours	\$150.00	\$ 12,000.00	12,000.00			\$ 12,000.00
Dump	40	hours	\$100.00	\$ 4,000.00	4,000.00			\$ 4,000.00
Labor	120	hours	\$40.00	\$ 4,800.00	4,800.00			\$ 4,800.00
			Sub-Total	\$ 59,310.00	\$ 28,660.00	\$ -	\$ 30,650.00	\$ 59,310.00
Mobilization								
Mobilization	1	each	\$5,000.00	\$ 5,000.00			5,000.00	\$ 5,000.00
Demobilization	1	each	\$5,000.00	\$ 5,000.00			5,000.00	\$ 5,000.00
			\$ -	\$ -				\$ -
			\$ -	\$ -				\$ -
			Sub-Total	\$ 10,000.00	\$ -	\$ -	\$ 10,000.00	\$ 10,000.00
TOTALS					\$ 28,660.00	\$ 25,700.00	\$ 61,989.50	\$ 116,349.50

### OTHER REQUIREMENTS:

**All of the columns in the budget table and the matching contribution table MUST be completed appropriately or the application will be invalid.** Please see the example budget sheet for additional clarification.

\*Units = feet, hours, inches, etc. Do not use lump sum unless there is no other way to describe the costs.

\*\*Can include in-kind materials. Justification for in-kind labor (e.g. hourly rates used for calculations). Describe here or in text.

Reminder: Government salaries cannot be used as in-kind match

\*\*\*The Review Panel suggests that design and oversight costs associated with a proposed project not exceed 15% of the total project budget. If design and oversight costs are in excess of 15%, applications must include a minimum of two competitive bids for the cost of undertaking the project.

\*\*\*\*The Review Panel recommends a maximum fencing cost of \$1.50 per foot. Additional costs may be the responsibility of the applicant and/or partners.

### MATCHING CONTRIBUTIONS (do not include requested funds)

CONTRIBUTOR	IN-KIND SERVICE	IN-KIND CASH	TOTAL	Secured? (Y/N)
Lolo National Forest	\$ 14,500.00	\$ 61,989.50	\$ 76,489.50	Y
Trout Unlimited	\$ 11,200.00	\$ -	\$ 11,200.00	Y
<b>TOTALS</b>	\$ 25,700.00	\$ 61,989.50	\$ 87,689.50	

Cedar Creek large woody debris



United States  
Department of  
Agriculture

Forest  
Service

Lolo National Forest  
Superior Ranger District  
406 822-4233

209 West Riverside  
P.O. Box 460  
Superior, MT 59872

Date: May 31, 2018

Future Fisheries Improvement Program  
c/o Michelle McGree  
Montana Fish, Wildlife & Parks  
P.O. Box 200701  
1420 E. 6th Avenue  
Helena, MT 59620-0701

Dear Panel Members,

The Lolo National Forest would like to offer our support for Trout Unlimited's grant application for a Future Fisheries Improvement Grant to continue restoration work on Cedar Creek.

Habitat within the Cedar Creek drainage has been heavily impacted by mining, logging and a railroad constructed to facilitate the transport of goods. These activities causing confinement of the stream channel, limiting its natural ability to meander, as well as increased sedimentation, lack of large woody debris that creates fish habitat, and loss of riparian vegetation that stabilizes streambanks and provides shade to cool water temperatures.


Cedar Creek is listed as a Priority Bull Trout Watershed by the Forest Service and was designated as core bull trout habitat by the Montana Bull Trout Scientific Group. In the past three years, Trout Unlimited teamed with the Lolo National Forest to prioritize restoration in critical bull trout habitat through the relocation of a road system, creation of floodplains and off channel habitat and the installation of over 115 large woody debris structures.

The project received the US Forest Service Rise to the Future award for Collaborative Integrated Aquatic Stewardship. Trout Unlimited, the Lolo National Forest, Mineral County Conservation District, private landowners, state agencies, volunteers, and other conservation organizations have been working collaboratively on projects in the Cedar Creek drainage for nearly a decade. These projects have resulted in mine waste removal, sediment reduction and fish passage improvements, increased surface water flow throughout the year, and functional streams and floodplains with native vegetation recovery.

Funds from the Future Fisheries Improvement Program are essential to completing these on the ground reclamation projects and would help this collaborative group in completing an ambitious watershed scale plan to remediate impacts in the area. Therefore, the Forest Service strongly supports this grant application. Thank you for your consideration.



Sincerely,



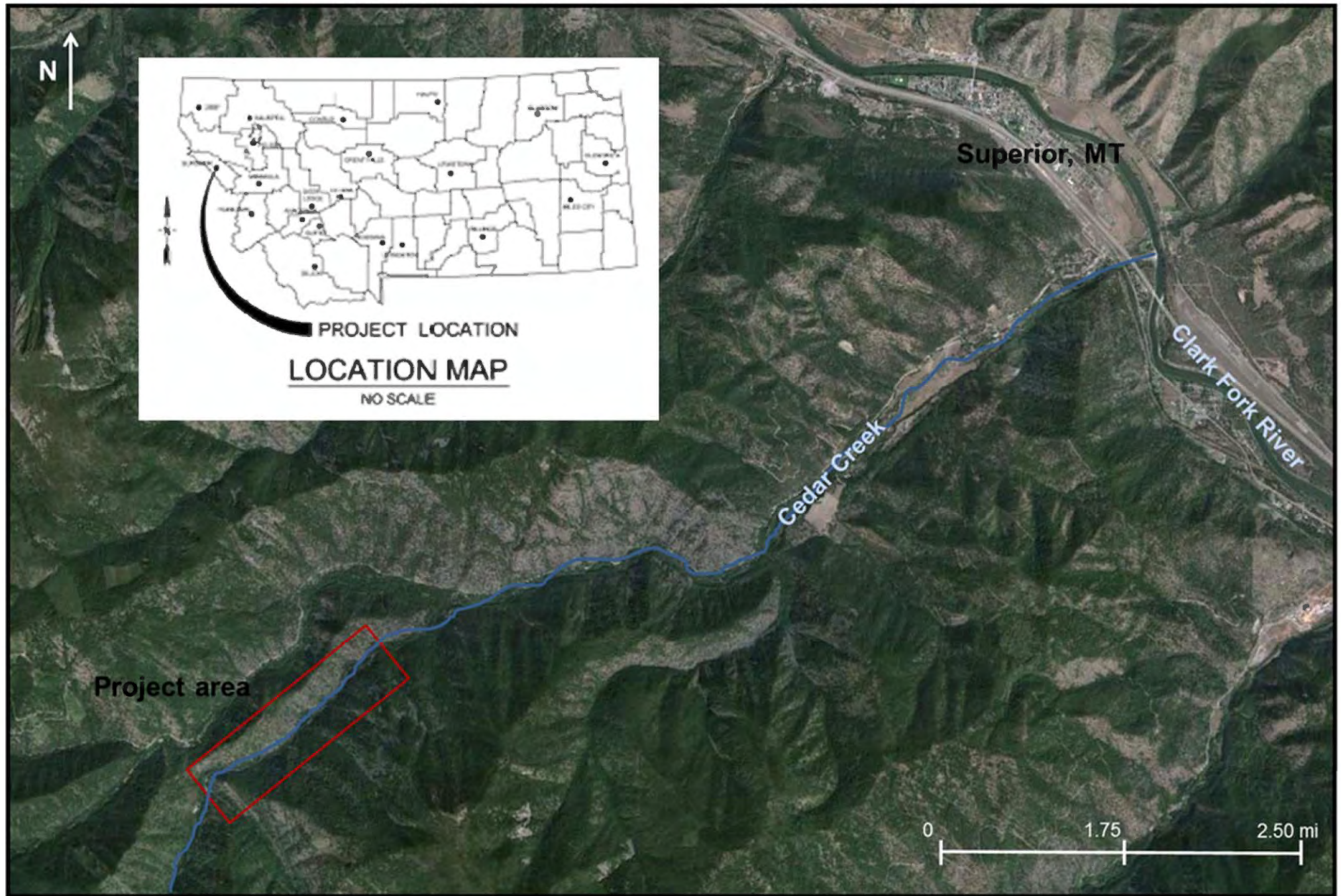
Tim Garcia  
Forest Supervisor



# Project Area Map



# Cedar Creek large woody debris



# Project Design Plans



GOVERNMENT FURNISHED  
- AGGREGATE SOURCE M.P. 0.50 ON FSR 18605

Cedar Creek large woody debris  
U.S. DEPARTMENT OF AGRICULTURE



FOREST SERVICE  
REGION ONE



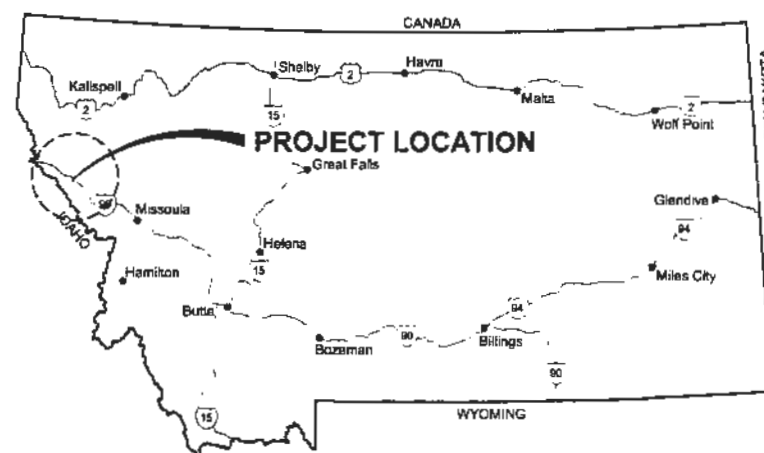
## SHEET INDEX

SHEET 1  
SHEET 2  
SHEET 3  
SHEET 4  
SHEET 5  
SHEET 6

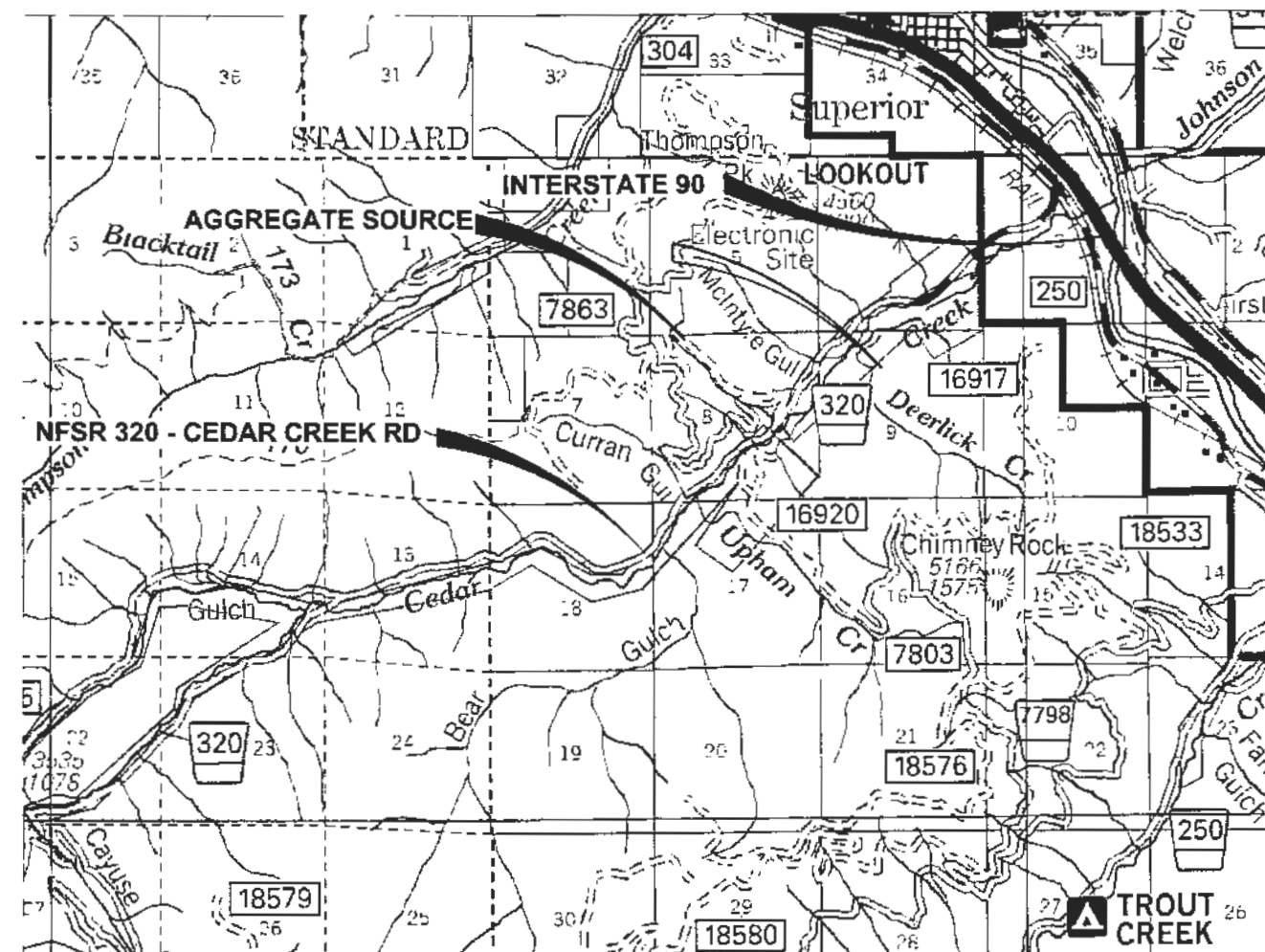
COVER  
NOTES AND SUMMARY OF QUANTITIES  
CEDAR LOWER PLAN & PROFILE  
CULVERT INSTALLATION DETAILS  
CULVERT ARMORING DETAILS  
CONSTRUCTION SIGNING DETAILS

# CONSTRUCTION PLANS FOR CEDAR CREEK ROAD REALIGNMENT - PHASE III NATIONAL FOREST SYSTEM ROAD NO. 320

LOLO NATIONAL FOREST  
SUPERIOR RANGER DISTRICT  
MINERAL COUNTY, MONTANA



LOCATION MAP  
NOT TO SCALE



VICINITY MAP  
NOT TO SCALE

APPROVED:

FOREST SUPERVISOR

March 6, 2018  
DATE

RECOMMENDED:

DISTRICT RANGER

2/16/18  
DATE

REVIEWED:

FOREST ENGINEER

3-6-18  
DATE

SUBMITTED:

PROJECT ENGINEER

2/16/18  
DATE

SHEET NO.  
1 OF 6

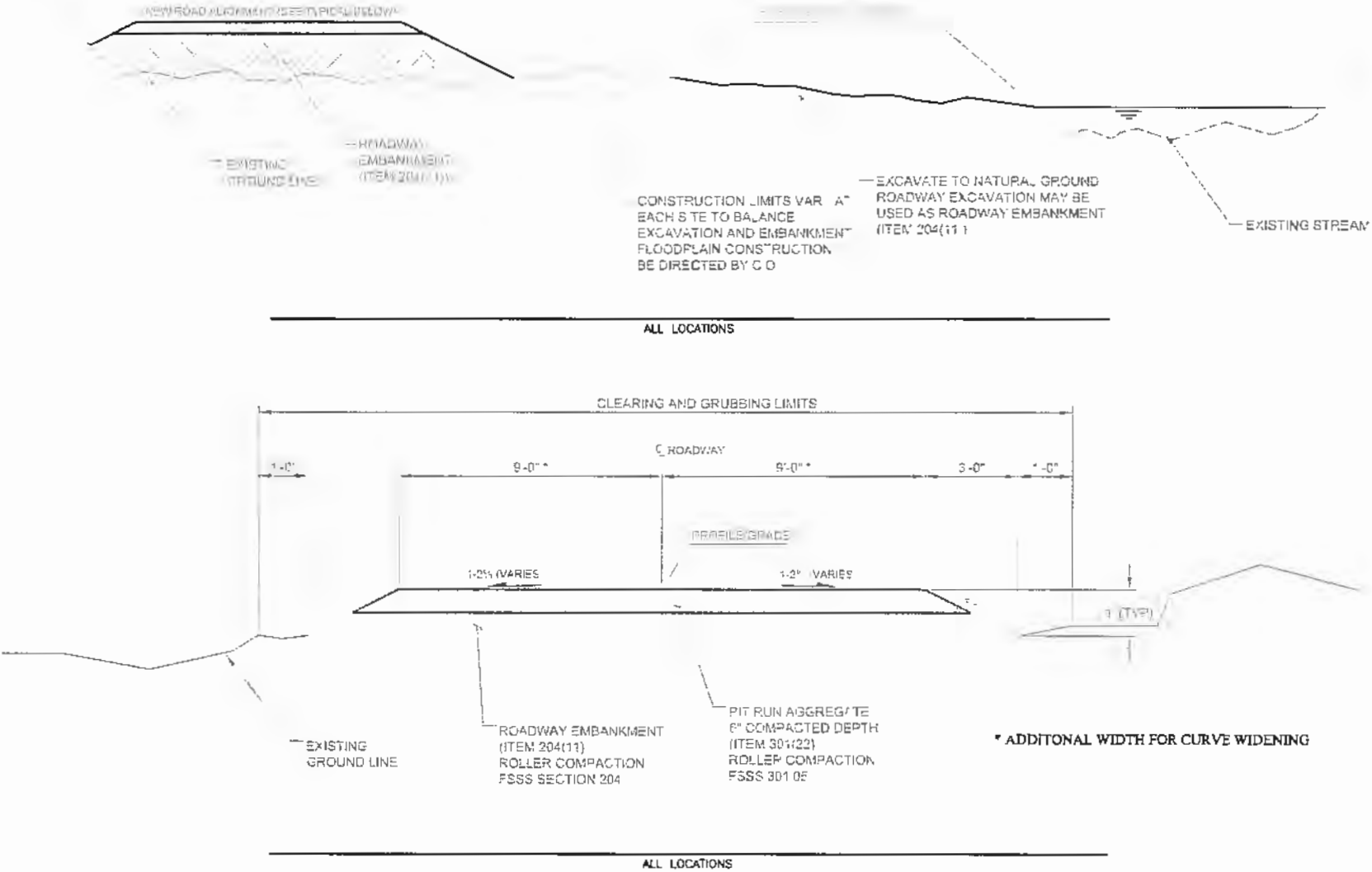
Cedar Creek large woody debris

GENERAL NOTES:

- SPECIFICATIONS:**  
MATERIALS AND CONSTRUCTION FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH 2003 STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAYS (FP-03).
- ROAD CLOSURE:**  
THE CONTRACTOR WILL BE ALLOWED TO CLOSE NFSR 320 IN CERTAIN INTERVALS FROM PUBLIC TRAFFIC FOR THE DURATION OF CONSTRUCTION. REFER TO THE SUPPLEMENTAL SPECIFICATIONS FOR DETAILS.
- MATERIAL SOURCES:**  
PIT RUN AGGREGATE MAY BE OBTAINED FROM THE McYINTIRE PIT ON NFSR 18605 APPROXIMATELY 6 MILES FROM THE PROJECT AREA
- SURVEYING:**  
THE GOVERNMENT WILL PROVIDE THE CONSTRUCTION STAKING FOR THIS PROJECT. NOTIFY THE GOVERNMENT 30 DAYS PRIOR TO CONSTRUCTION FOR ADEQUATE TIME TO SURVEY.
- CLEARING AND GRUBBING:**  
CLEARING AND GRUBBING SHALL CONSIST OF REMOVING VEGETATION FROM THE CONSTRUCTION LIMITS AND DISPOSING THEM IN ACCORDANCE WITH THE FSSS.
- SOIL EROSION AND POLLUTION CONTROL:**  
CONTRACTOR SHALL PROTECT THE STREAM FROM SEDIMENT DEPOSIT FROM CONSTRUCTION ACTIVITIES. PROTECTION SHALL INCLUDE BUT NOT LIMITED TO SILT FENCING, STRAW WADDLES OR STAKED HAY BALES ON THE ENTIRE LENGTH OF THE AFFECTED STREAM CHANNEL. CONTRACTOR SHALL SUBMIT A PLAN FOR APPROVAL.
- CULVERT INSTALLATION:**  
CONSTRUCTION OF A CATCH BASIN IS INCIDENTAL TO ITEM 602 ON ALL NEW CULVERT INSTALLATIONS. CONTRACTOR SHALL ORDER 16 GAGE FOR ALL NEW 18" DIAMETER CULVERTS, 14 GAGE FOR ALL NEW 24" CULVERTS AND LARGER DIAMETER CULVERTS. CULVERTS THAT ARE DESIGNATED TO BE CUT OFF THE CONTRACTOR SHALL RE-GALVANIZE THE EXPOSED STEEL. CONTRACTOR SHALL NOT ORDER/DELIVER CULVERTS TO THE PROJECT SITE UNTIL A FINAL CULVERT LISTING IS PROVIDED BY THE C.O. CONTRACTOR SHALL INSTALL CULVERTS AT A SKEW AS STAKED AT INLET AND OUTLET.
- WORK:**  
PRIOR TO PIT RUN SURFACING THE CONTRACTOR SHALL PREPARE THE SUBGRADE SURFACE IN ACCORDANCE WITH SECTION 204 OF THE SUPPLEMENTAL SPECIFICATIONS AND APPROVED IN WRITING BY THE C.O.
- SITE CLEANUP:**  
PRIOR TO THE FINAL INSPECTION, THE CONTRACTOR SHALL CLEAN THE SITE. THIS WORK IS INCIDENTAL AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- THE CONTRACTOR SHALL BROADCAST SEED, FERTILIZER AND MULCH TO THE DISTURBED AREAS (INCLUDING CUT AND FILL SLOPES) WITH A SEED MIX IN ACCORDANCE WITH SECTION 625 OF THE SUPPLEMENTAL SPECIFICATIONS. SEED MIX SHALL BE SUBMITTED TO THE C.O. FOR APPROVAL PRIOR TO APPLICATION.
- SUBMITTALS:**  
REFER TO SECTION 153 OF THE PROJECT SPECIFICATIONS FOR A LISTING OF THE REQUIRED SUBMITTALS.
- UTILITIES:**  
INDIVIDUAL ELECTRIC, NATURAL GAS, TELEPHONE, PROPANE, ETC. HAVE NOT BEEN INDICATED ON THESE DRAWINGS. THE CONTRACTOR SHALL CONTACT THE UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 PRIOR TO PERFORMING ANY OF THE WORK. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO COORDINATE WITH THE UTILITY COMPANIES FOR COMPLETION OF THE PROJECT AS DESCRIBED HEREIN. THIS WORK IS INCIDENTAL TO THE PROJECT.
- MOBILIZATION:**  
ALL CONSTRUCTION EQUIPMENT SHALL BE WASHED AND INSPECTED PRIOR TO ENTERING THE PROJECT AREA.
- QUANTITIES:**  
EXCAVATION QUANTITIES ARE REPRESENTED AS CUBIC YARDS IN PLACE. GRAVEL QUANTITIES ARE REPRESENTED AS COMPACTED CUBIC YARDS IN PLACE. CONTRACTOR SHALL ADJUST QUANTITIES FOR LOOSE YARDS ENCOUNTERED.
- EQUIPMENT RENTAL:**  
HOURLY EQUIPMENT RENTAL SHALL BE ORDERED AND DIRECTED BY THE C.O. EQUIPMENT HOURS WILL BE PAID FOR AS THE ACTUAL AMOUNT OF WORK PERFORMED AND AGREED IN WRITING.

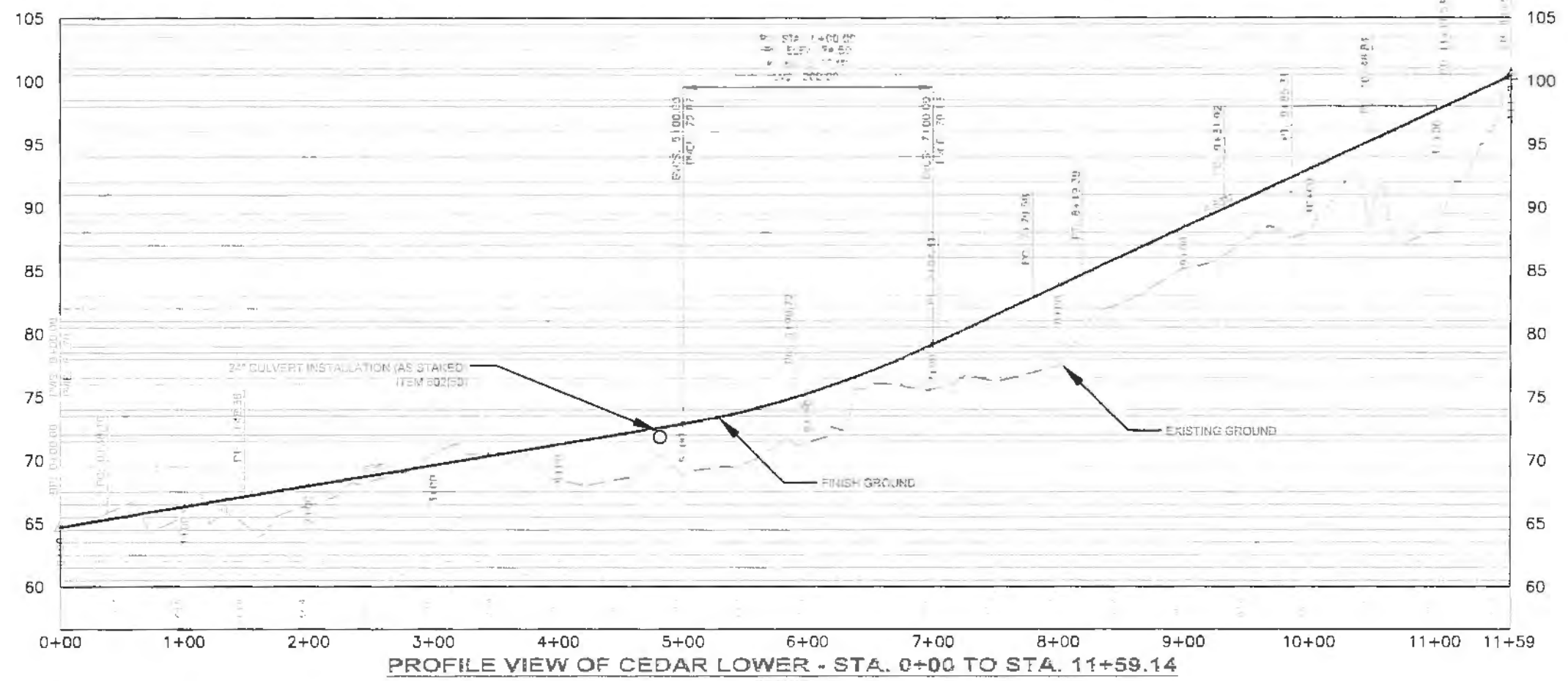
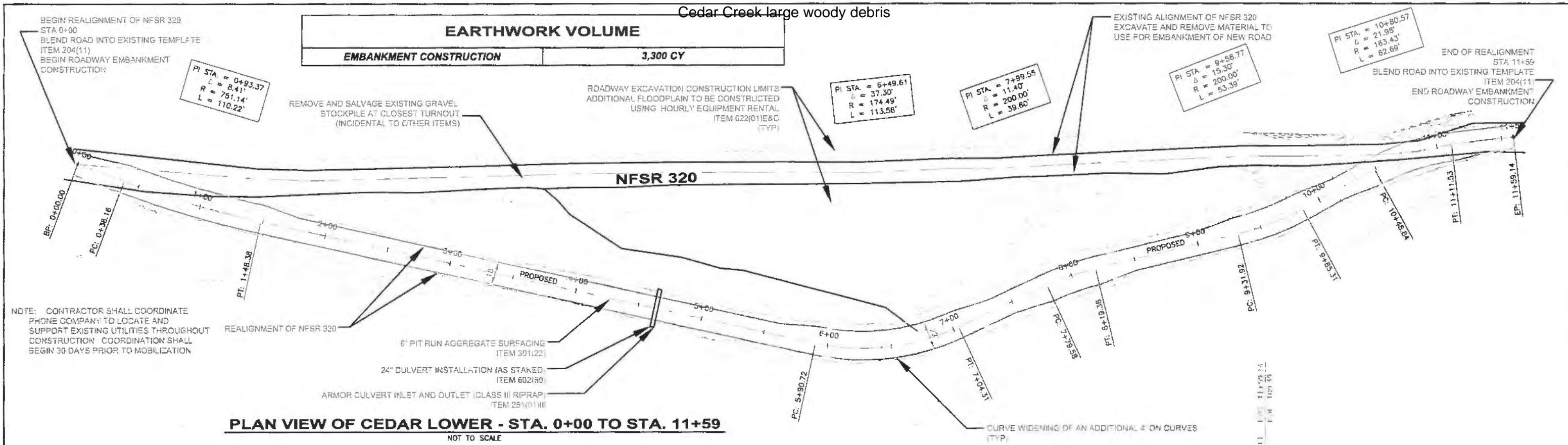
NOTES:

1. COMPACT EXCAVATED SUBGRADE TO AN UNYIELDING CONDITION PRIOR TO THE PLACEMENT OF BASE MATERIAL.
2. COMPACT AGGREGATE SURFACE COURSE UNTIL NO VISUAL DEFLECTION IS PRESENT.
3. ROADWAY EXCAVATION AND EMBANKMENT ARE ASSUMED TO BALANCE. EXCESS MATERIAL (WASTE) REMAINS, THE CONTRACTOR SHALL REMOVE THE REMAINING MATERIAL USING HOURLY EQUIPMENT RENTAL ITEMS. LIKEWISE, IF ADDITIONAL MATERIAL IS NEEDED THE CONTRACTOR SHALL IMPORT MATERIAL USING HOURLY EQUIPMENT RENTAL.



ESTIMATED QUANTITIES\*

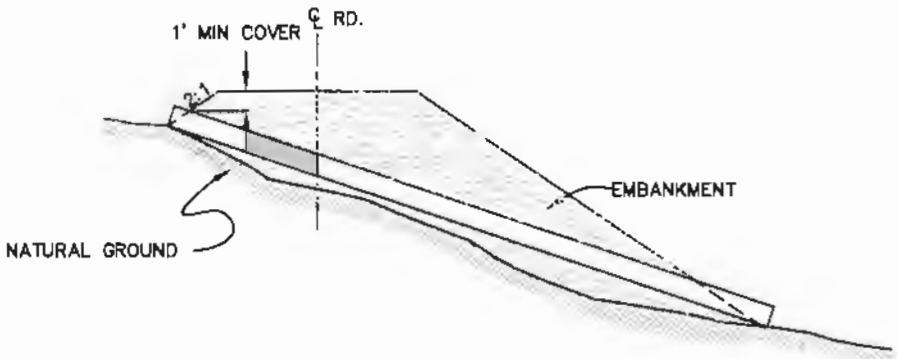
151(01)	MOBILIZATION	LSQ	LS	1
156(01)	TRAFFIC CONTROL	LSQ	LS	1
157(13)	SOIL EROSION AND POLLUTION CONTROL	LSQ	LS	1
201(01)	CLEARING AND GRUBBING	DQ	AC	1.05
204(11)	EMBANKMENT CONSTRUCTION	DQ	CY	3,300
251(01)III	CLASS III RIPRAP PLACEMENT	DQ	CY	2
301(22)	PIT RUN AGGREGATE (GOVERNMENT FURNISHED SOURCE)	DQ	CY	410
602(50)24	24" DIAMETER CULVERT INSTALLATION	AQ	LF	40
622(01)D	EQUIPMENT RENTAL, DUMP TRUCK	AQ	HR	20
622(01)E	EQUIPMENT RENTAL, EXCAVATOR	AQ	HR	25
625(01)	SEEDING, FERTILIZER AND MULCH, DRY METHOD	LSQ	LS	1





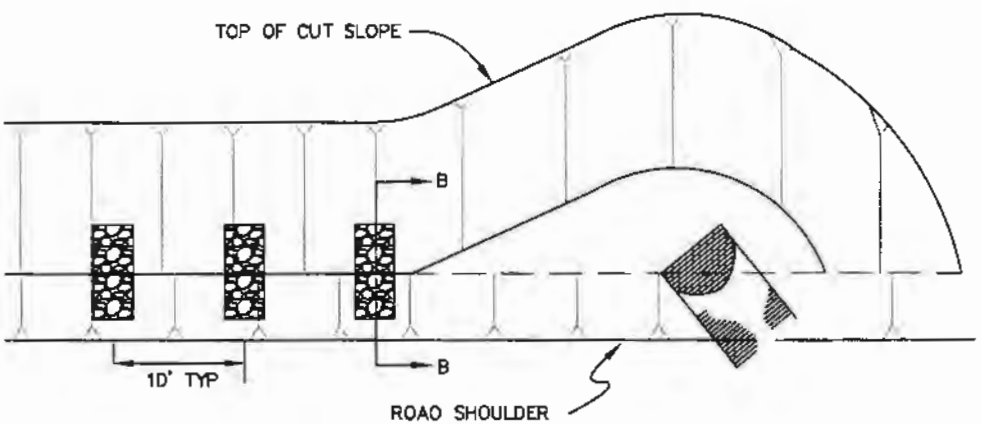
TYPICAL INSTALLATION IN EMBANKMENT

NO SCALE



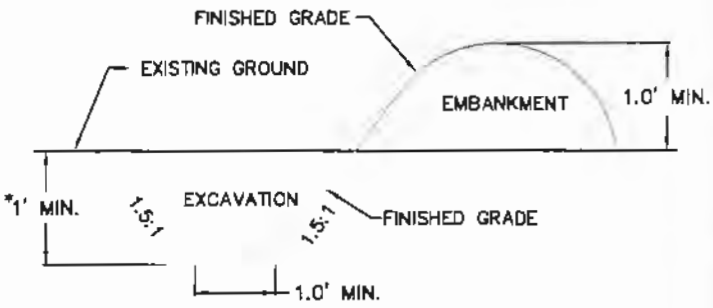
SEDIMENT TRAPS DETAILS

NO SCALE



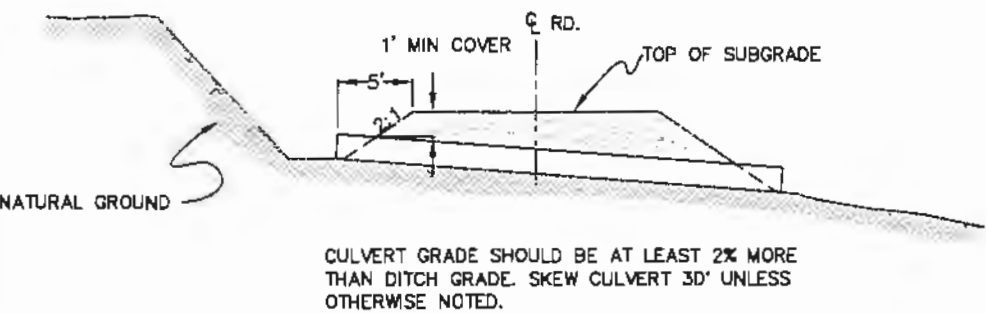
TYPICAL LEAD OUT DITCH

NO SCALE



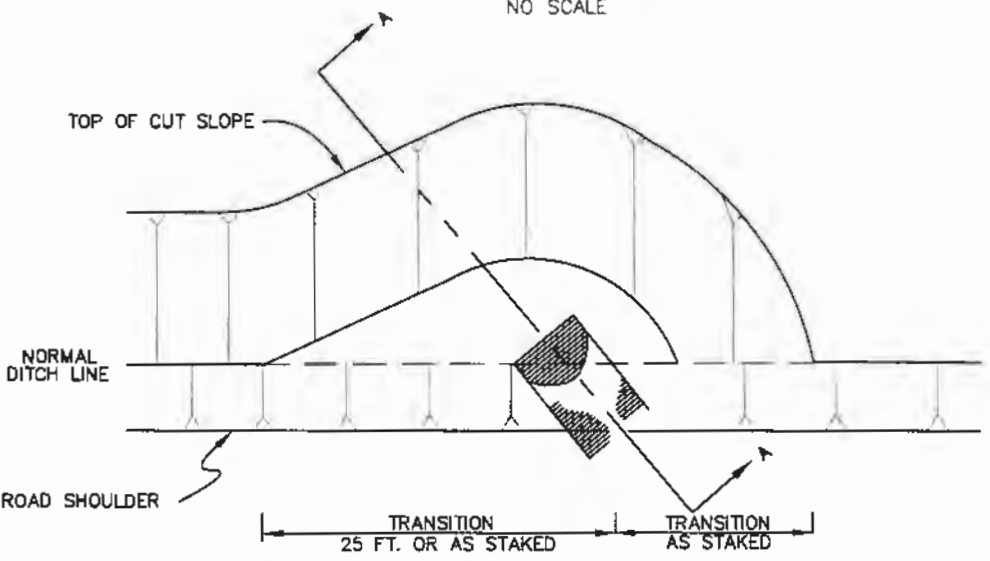
TYPICAL DITCH RELIEF INSTALLATION

NO SCALE



DITCH RELIEF CATCH BASIN TYPICAL SECTION

NO SCALE



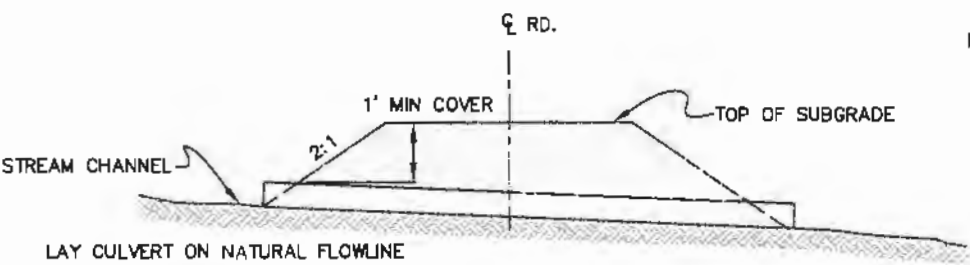
SECTION B - B

NO SCALE



TYPICAL INSTALLATION IN STREAM CHANNEL

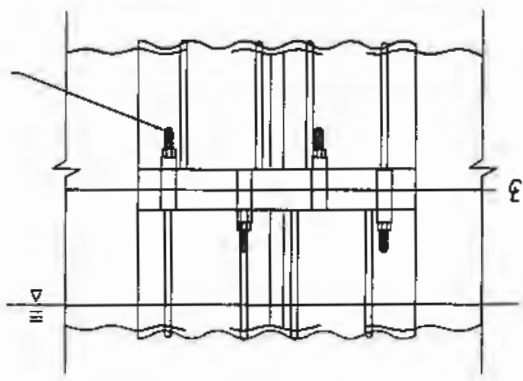
NO SCALE



CMP COUPLING BAND DETAILS

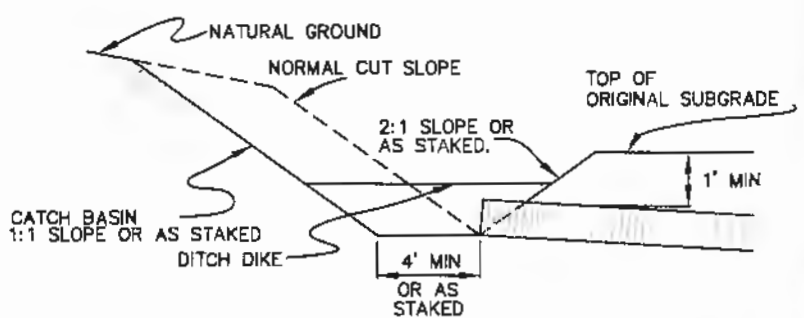
NO SCALE

INSTALL COUPLING BAND CONNECTIONS ON THE SIDES OF THE CMP. DO NOT INSTALL ON TOP. ALTERNATE BOLTS AS SHOWN.



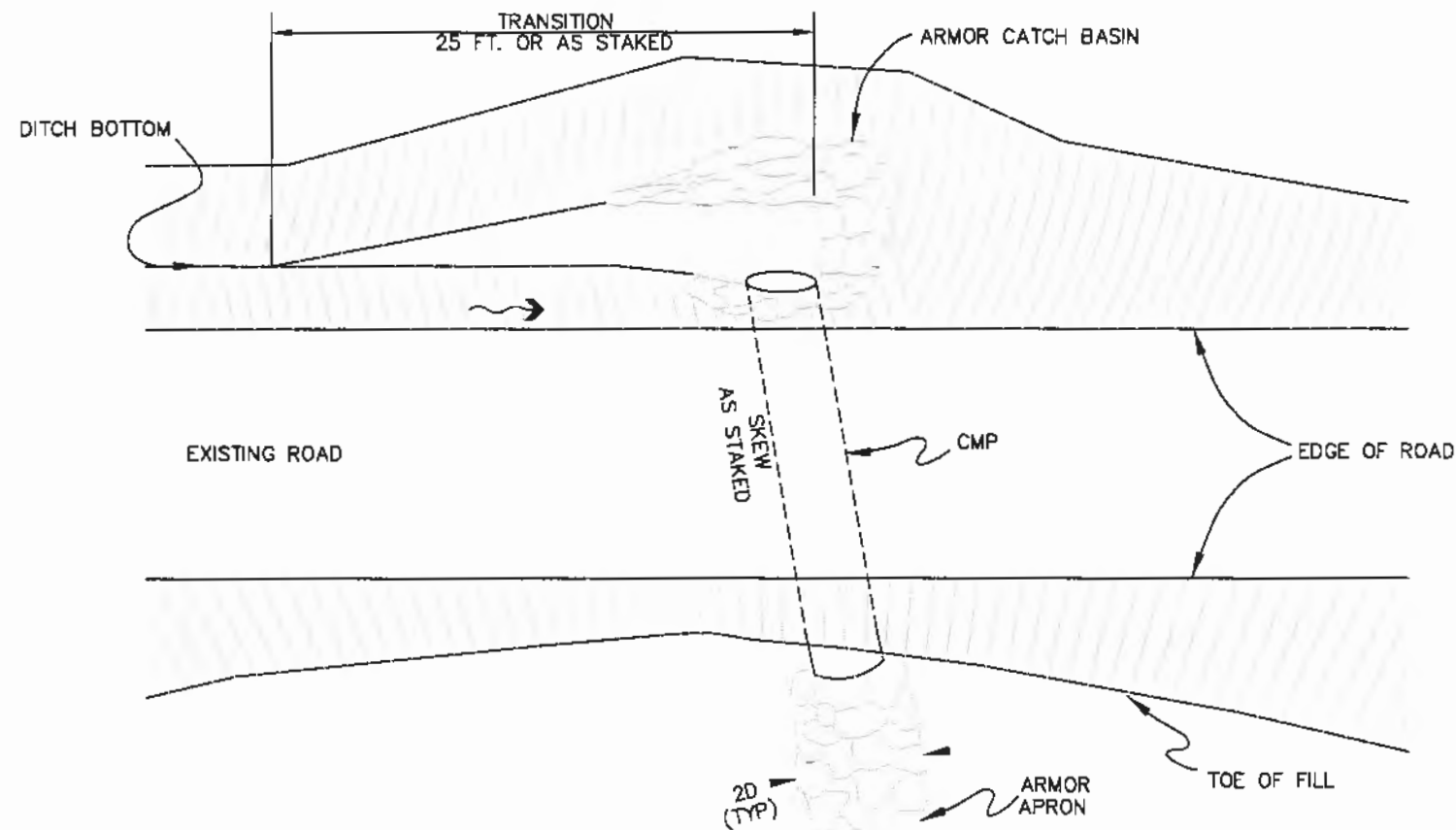
SECTION A - A

NO SCALE

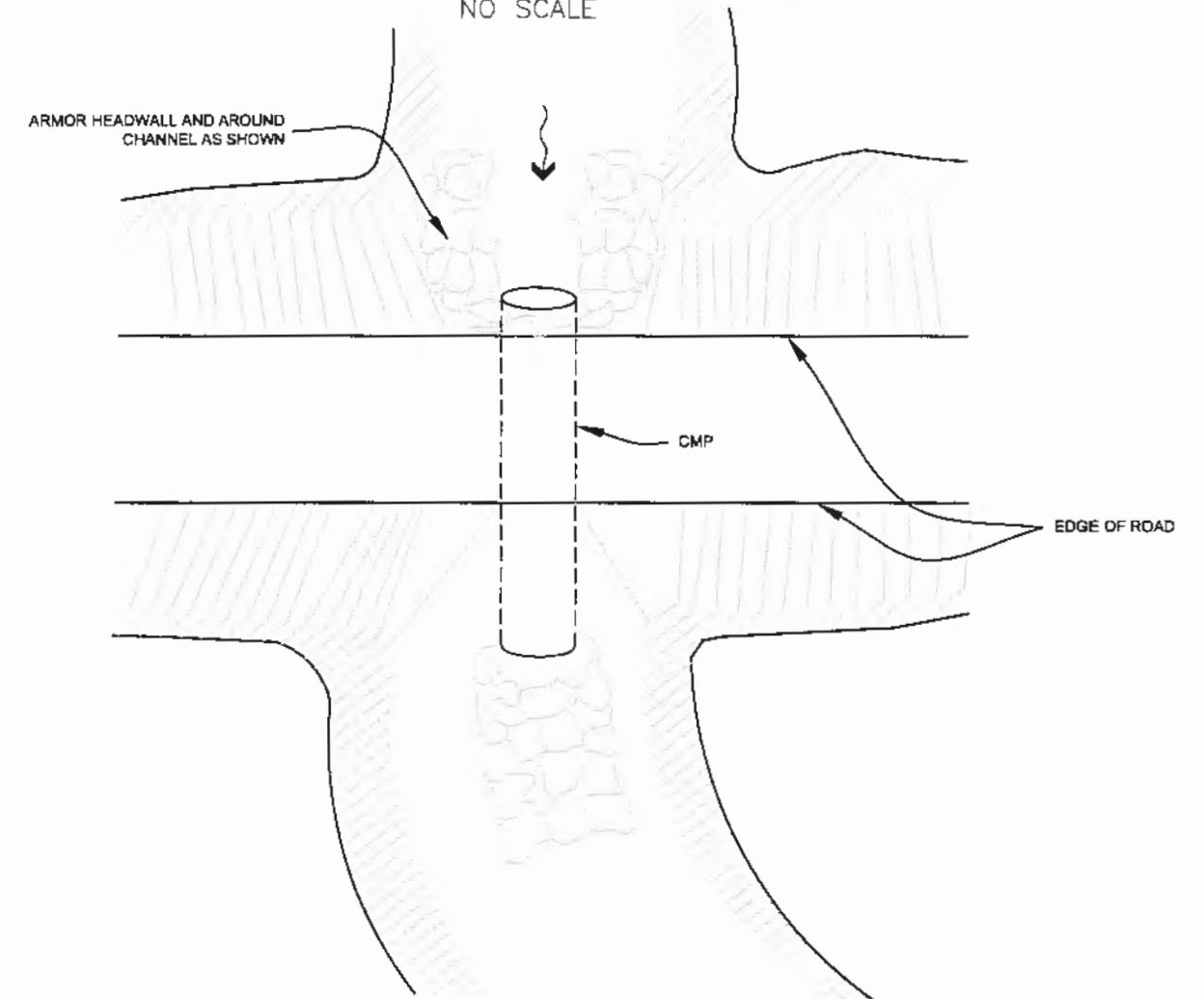


**DITCH RELIEF (PLAN VIEW)**

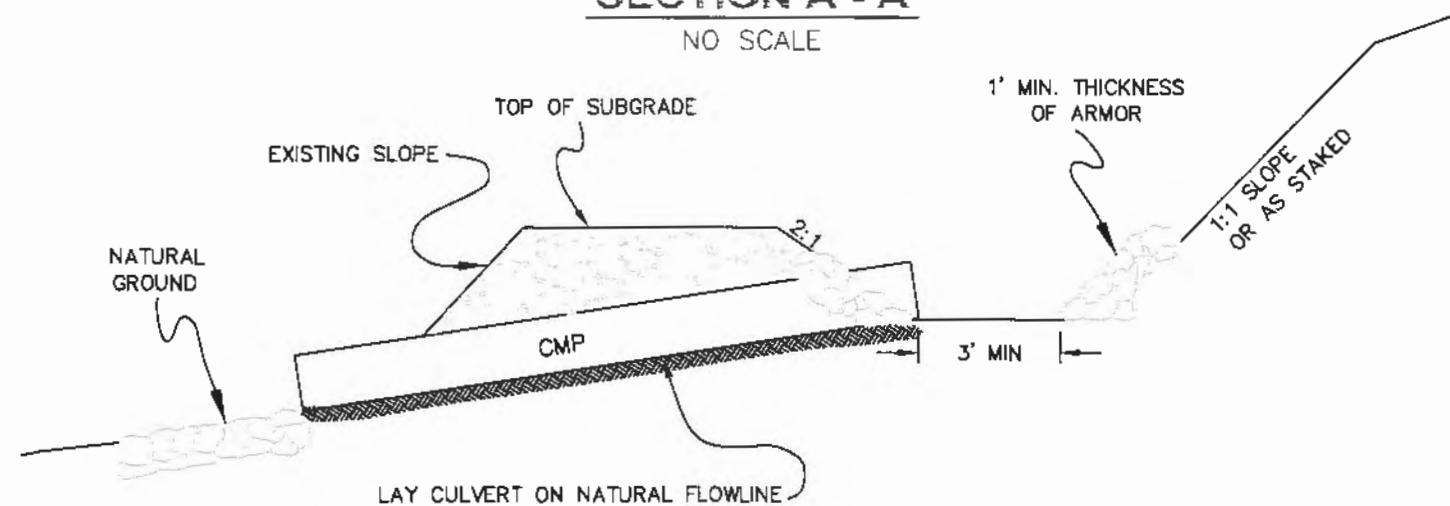
NO SCALE

**EPHEMERAL DRAW (PLAN VIEW)**

NO SCALE

**SECTION A - A**

NO SCALE

**CULVERT ARMORING & INSTALLATION DETAILS:**

1. SIZE CLASS AND QUANTITIES OF RIPRAP ARE SHOWN ON THE WORKLISTS OR AS STAKED BY THE C.O.
2. ARMORING MATERIAL MAY BE OBTAINED AT LOCATIONS SHOWN ON THE PLANS, COLLECTED ALONG THE ROAD, OR CONSERVED DURING EXCAVATION.
3. CULVERT INLETS AND OUTLETS SHALL BE CLEANED PRIOR TO PLACING RIPRAP.
4. A TYPICAL INSTALLATION FOR A DITCH RELIEF CULVERT IS SHOWN ON THIS SHEET. A CULVERT INSTALLATION IN AN EPHEMERAL DRAW DOES NOT REQUIRE CONSTRUCTION OF A CATCH BASIN.
5. UNLESS OTHERWISE STATED, CULVERT THICKNESS SHALL BE MINIMUM OF 0.064" (18 GAGE).
6. COUPLING BANDS SHALL BE TORQUED TO 25' TO 30'-POUNDS. INSPECT FOR ADEQUATE SEATING OF THE BAND IN THE CORRUGATIONS. WHILE TIGHTENING THE BOLTS, ADJUST THE BAND BY TAPPING TO SEAT THE BAND IN THE CORRUGATIONS.



U.S. DEPARTMENT OF AGRICULTURE  
FOREST SERVICE  
LOLO NATIONAL FOREST  
SUPERIOR RANGER DISTRICT

CEDAR CREEK ROAD REALIGNMENT  
PHASE III

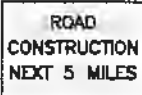








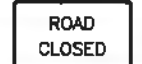

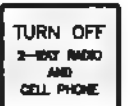
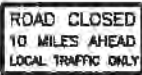







CULVERT ARMORING DETAILS

NFSR  
320

DESIGNED: J. KOSKELA DATE: 4/8/2017  
CHECKED: N. KEGEL DATE: 4/8/2017

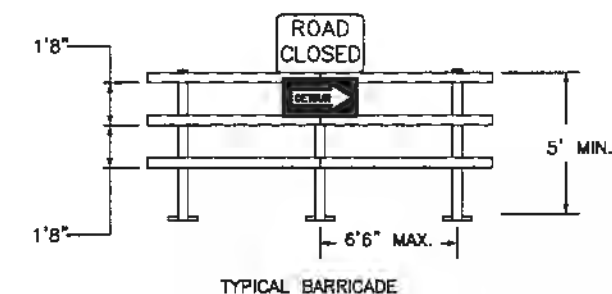
SHEET NO.  
5 OF 6

# Cedar Creek large woody debris

SIGN	SIGN NO.	MESSAGE	MIN. SIZE INCHES	COLORS	PLACEMENT	SIGN	SIGN NO.	MESSAGE	MIN. SIZE INCHES	COLORS	PLACEMENT	SIGN	SIGN NO.	MESSAGE	MIN. SIZE INCHES	COLORS	PLACEMENT
	G20-1	ROAD CONSTRUCTION NEXT *5 MILES	36 x 24	BLACK LTRS. ORANGE BKGRD.	AT EACH PROJECT TERMINUS		W21-1	MEN WORKING	24 x 24	BLACK LTRS. ORANGE BKGRD.	AS NEEDED		W21-3	ROAD MACHINERY *500 FEET	24 x 24	BLACK LTRS. ORANGE BKGRD.	500 FT. FROM EACH END OF WORK AREA
	G20-2	END CONSTRUCTION	36 x 18	BLACK LTRS. ORANGE BKGRD.	AT EACH END OF PROJECT		W21-2	FRESH OIL	24 x 24	BLACK LTRS. ORANGE BKGRD.	AS NEEDED		W21-6	SURVEY CREW	24 x 24	BLACK LTRS. ORANGE BKGRD.	AS NEEDED
	M4-10R M4-10L	DETOUR	36 x 12	BLACK LTRS. ORANGE BKGRD.	AS NEEDED		W20-1	ROAD CONSTRUCTION *500 FEET	30 x 30	BLACK LTRS. ORANGE BKGRD.	500 FT. BEFORE BEGINNING OF PROJECT		W22-1	BLASTING ZONE *1000 FEET	30 x 30	BLACK LTRS. ORANGE BKGRD.	1000 FT. FROM EACH END OF BLASTING AREA
	R11-2	ROAD CLOSED	30 x 18	BLACK LTRS. WHITE BKGRD.	AS NEEDED		W20-2	DETOUR *500 FEET	30 x 30	BLACK LTRS. ORANGE BKGRD.	500 FT. PRIOR TO EACH DETOUR		W22-2	TURN OFF 2-WAY RADIO AND CELL PHONE	30 x 27	BLACK LTRS. ORANGE BKGRD.	1000 FT. FROM EACH END OF BLASTING AREA
	R11-3	ROAD CLOSED *10 MILES AHEAD LOCAL TRAFFIC ONLY	36 x 18	BLACK LTRS. WHITE BKGRD.	10 MILES AHEAD OF CONSTRUCTION		W20-3	ROAD CLOSED *500 FEET	30 x 30	BLACK LTRS. ORANGE BKGRD.	500 FT. BEFORE BARRICADE		W22-3	END BLASTING ZONE	30 x 27	BLACK LTRS. ORANGE BKGRD.	1000 FT. FROM EACH END OF BLASTING AREA
	W3-1c	BE PREPARED TO STOP	24 x 24	BLACK LTRS. ORANGE BKGRD.	AS NEEDED		W13-1	*35 MPH	13 x 13	BLACK LTRS. YELLOW BKGRD.	AS NEEDED		W20-7	FLAGMAN *500 FEET	30 x 30	BLACK LTRS. ORANGE BKGRD.	500 FT. BEFORE EACH FLAGMAN
	W8-6	TRUCK CROSSING	24 x 24	BLACK LTRS. ORANGE BKGRD.	AS NEEDED												
	FW11-7	LOG TRUCKS	24 x 24	BLACK LTRS. ORANGE BKGRD.	AS NEEDED												

## GENERAL SPECIFICATIONS:

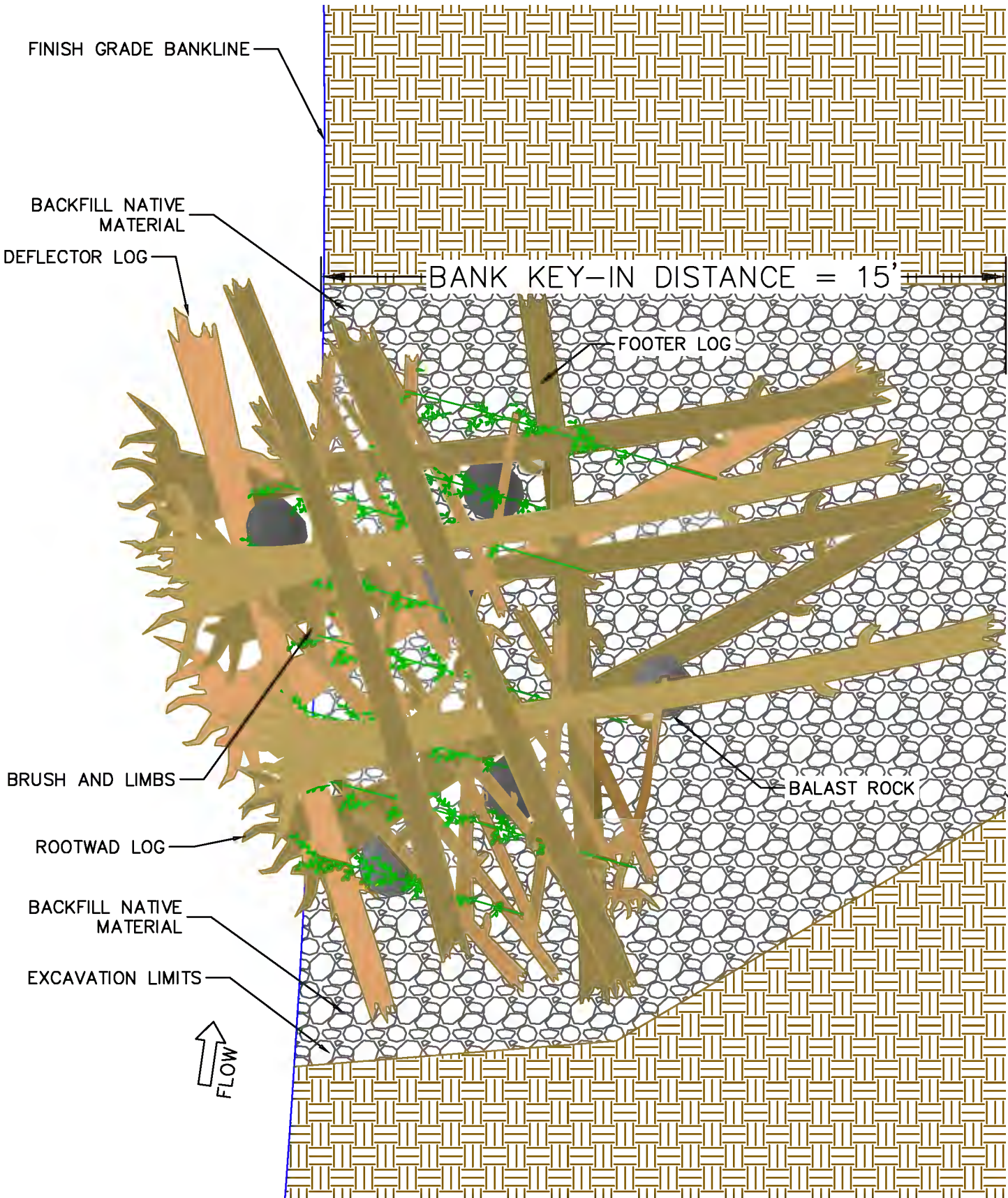
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH: (a) THE STANDARD SPECIFICATIONS APPLICABLE TO THE PROJECT, AND (b) THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
- WHERE TRAFFIC IS MAINTAINED THROUGH OR OVER ANY PART OF THE PROJECT, THE CONTRACTOR WILL BE REQUIRED TO MARK ALL HAZARDS WITHIN THE LIMITS OF THE PROJECT (INCLUDING CONNECTING ROADS) WITH WELL-MAINTAINED BARRICADES, WARNING, AND GUIDE SIGNS. ALL BARRICADES AND SIGNS SHALL BE MOVED, ADDED TO, CHANGED, OR REMOVED ENTIRELY WHEN THE PROJECT IS COMPLETED.
- WHERE TRAFFIC IS PROHIBITED FROM THE PROJECT, THE CONTRACTOR SHALL PROVIDE, ERECT, AND MAINTAIN SIGNS AND BARRICADES, COMPLETED, AT THE ENDS OF THE PROJECT.
- WORK ON THE PROJECT SHALL NOT BE STARTED UNTIL ALL REQUIRED SIGNS ARE IN PLACE AND APPROVED BY THE ENGINEER. WHERE SPEED CONTROL APPEARS NECESSARY SUCH SPEED CONTROL SHALL BE REQUESTED FROM THE ENGINEER BY THE CONTRACTOR. CONTROL OF SPEED THROUGH A CONSTRUCTION ZONE MAY BE ACHIEVED BY ADVISORY SPEED PLATES IN CONJUNCTION WITH WARNING SIGNS.
- ALL SIGNS AND BARRICADES SHALL BE PLACED FOR BEST VISIBILITY AND LEGIBILITY, MAINTAINED IN GOOD CONDITION AND KEPT CLEAN AND FREE OF DIRT AT ALL TIMES. CONTRACTOR'S AND ENGINEER'S VEHICLES AND EQUIPMENT MUST BE PARKED SO THAT SIGNS AND BARRICADES ARE VISIBLE TO APPROACHING TRAFFIC AT ALL TIMES.
- IN ALL CASES WARNING SIGNS ARE TO BE PLACED WELL IN ADVANCE OF THE HAZARD, THE DISTANCE DEPENDING ON TOPOGRAPHY AND EXISTING APPROACH SPEEDS.
- SIGNS WITH THE PREFIX "R" IN THE SIGN CODE ARE REGULATORY SIGNS AND AS SUCH IMPOSE LEGAL COMPULSIONS OR RESTRICTION ON DRIVERS AND SHOULD ONLY BE USED AS AUTHORIZED BY THE ENGINEER.
- SIGNS WITH THE PREFIX "W" IN THE SIGN CODE ARE WARNING SIGNS AND ARE USED TO ALERT TRAFFIC TO EXISTING OR POTENTIALLY HAZARDOUS CONDITIONS.
- SIGNS WITH THE PREFIX "G" OR "M" IN THE SIGN CODE ARE GUIDE SIGNS. THOSE WITH THE PREFIX "G" CONVEY GENERAL INFORMATION AND THOSE WITH THE PREFIX "M" ARE USED FOR MARKING THE TRAFFIC ROUTE.
- ALL SIGNS SHALL BE REFLECTORIZED UNLESS OTHERWISE SPECIFIED ON THE PLANS AND/OR BY THE C.O. REGULATORY SIGNS (UNLESS OTHERWISE SPECIFIED) SHALL HAVE A GREEN-PROCESSED BLACK LEGEND AND BORDER ON A WHITE FLEXIBLE REFLECTIVE SHEETING, NONEXPOSED LENS BACKGROUND. THE GUIDE AND WARNING SIGNS SHALL HAVE A SCREEN PROCESSED BLACK LEGEND AND BORDER ON AN ORANGE FLEXIBLE REFLECTIVE SHEETING, NONEXPOSED LENS BACKGROUND.
- POSTS FOR REGULATORY, WARNING, AND GUIDE SIGNS WILL NORMALLY BE 4" ROUND OR 4"x4" - S4S WOOD POSTS.
- SIGN PANELS FURNISHED BY THE CONTRACTOR FOR USE ONLY DURING CONSTRUCTION MAY BE FABRICATED FROM PLYWOOD, ALUMINUM, STEEL OR OTHER SUITABLE MATERIAL BUT SHALL BE STABLE AND DURABLE ENOUGH TO MEET OTHER REQUIREMENTS IN THIS STANDARD.
- ALL MATERIAL SHALL BE SOUND AND DURABLE. BARRICADES, SIGNS, SYMBOLS, AND LETTERING SHALL BE OF GOOD WORKMANSHIP. UNEVEN LETTERING WILL NOT BE ACCEPTED.
- ALTERNATE METHODS OF PROCESSING SIGNS OR THE SUBSTITUTION OF SYMBOLS OR OTHER REFLECTING ELEMENTS FOR PAINTED SYMBOLS WILL BE PERMITTED ONLY AFTER APPROVAL BY THE ENGINEER.
- SIGNS AND BARRICADES USED AS "TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION" ARE NOT TO BE PAID FOR SEPARATELY.





# LARGE WOOD STRUCTURE PLAN VIEW

NTS



## LARGE WOOD STRUCTURE INSTALLATION

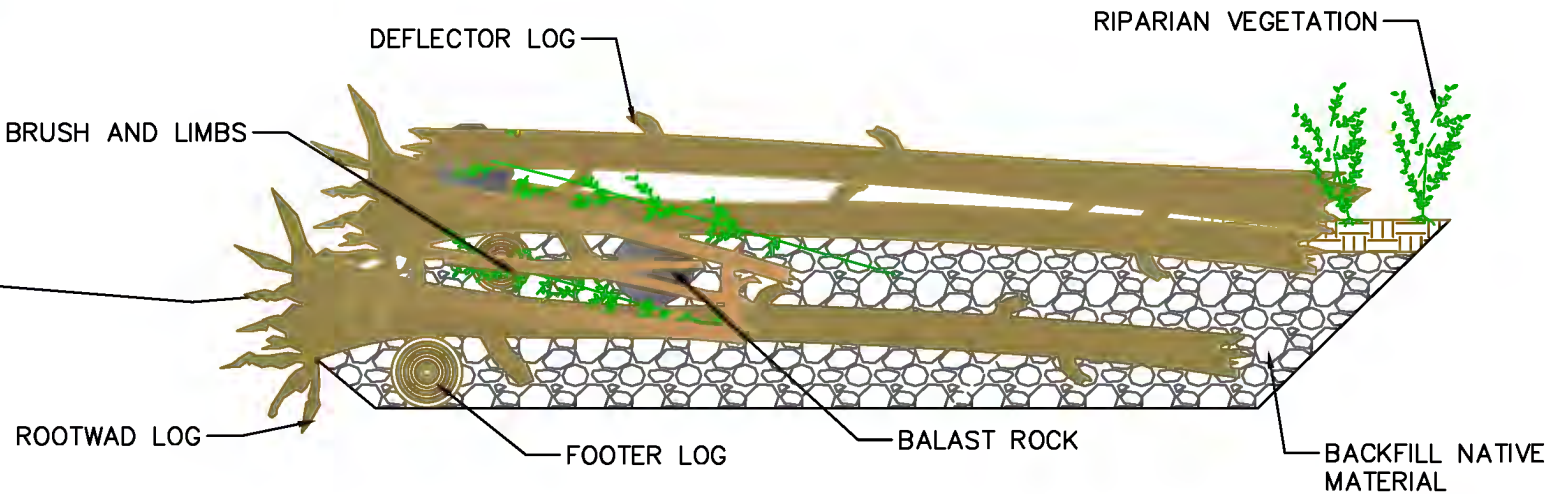
1. EXCAVATE TO THE EXCAVATION LIMITS. EXCAVATED MATERIAL SHALL BE STOCKPILED ON THE FLOODPLAIN OUTSIDE OF THE IMMEDIATE WORK AREA.
2. INSTALL TWO FOOTER LOGS AT THE BASE OF THE EXCAVATED TRENCH AT THE ORIENTATIONS NOTED IN PLAN VIEW. FOOTER LOGS SHALL PROJECT NO GREATER THAN 2 FT. BEYOND THE FINISH GRADE BANK LINE. EXPOSED ENDS OF FOOTER LOGS SHALL BE BROKEN/ROUGHENED TO APPEAR NATURAL.
3. INSTALL THREE TO FIVE ROOTWAD LOGS INTERSECTING BOTH FOOTER LOGS AT THE ORIENTATION NOTED IN PLAN VIEW. THE UPSTREAM ROOTWAD SHALL NOT PROJECT INTO THE CHANNEL AND SHALL BE FLUSH WITH THE FINISHED BANK LINE. THE DOWNSTREAM ROOTWAD SHALL PROJECT NO GREATER THAN 5-6 FT BEYOND THE FINISHED BANKLINE.
4. BACKFILL TRENCH WITH STOCKPILED MATERIAL UP TO THE TOP OF THEE FOOTER LOGS. BACKFILL SHALL BE BUCKET COMPACTED. PLACE BALAST ROCK WHERE ROOTWAD LOGS INTERSECT FOOTER LOGS.
5. INSTALL A SECOND TIER OF TWO FOOTER LOGS. FOOTER LOGS SHALL PROJECT NOT GREATER THAN 2 FT. BEYOND THE FINISH GRADE BANK LINE.
6. INSTALL BRUSH AND LIMBS APPROXIMATE 45° ANGLE TO THE ROOTWADS.
7. INSTALL THREE ROOTWAD LOGS INTERSECTING THE LOWER ROOTWAD LOGS AT THE ORIENTATION NOTED IN PLAN VIEW. THE UPSTREAM ROOTWAD SHALL NOT PROJECT INTO THE CHANNEL AND SHALL BE FLUSH WITH THE FINISHED BANK LINE. THE DOWNSTREAM ROOTWAD SHALL PROJECT NO GREATER THAN 5-6 FT BEYOND THE FINISHED BANKLINE.
8. INSTALL BRUSH AND LIMBS APPROXIMATE 45° ANGLE TO THE ROOTWADS.
9. BACKFILL TRENCH WITH STOCKPILED MATERIAL UP TO THE TOP OF THE ROOTWAD LOGS. BACKFILL SHALL BE BUCKET COMPACTED. PLACE BALAST ROCK WHERE ROOTWAD LOGS INTERSECT LOWER ROOTWAD LOGS.
10. INSTALL DEFLECTOR LOGS AT APPROXIMATE 45° ANGLE TO ROOTWAD STEMS. DEFLECTOR LOGS SHALL EXTEND NO FURTHER THAN 3 FT BEYOND FINISHED BANKLINE.
11. PLACE AND BUCKET COMPACT STOCKPILE MATERIAL TO THE FINISHED BANK LINE. NO AREAS BEHIND THE FINISHED BANKLINE ARE TO BE LEFT BELOW FINISHED GRADE.

## MATERIALS

1. ROOTWADS, FOOTER LOGS AND DEFLECTOR LOGS SHALL BE BETWEEN 18 AND 30 INCH DBH WITH MINIMUM LENGTH OF 20 FT.
2. BALAST ROCK SHALL BE A MINIMUM 2 FT DIAMETER ALONG THE B-AXIS
3. BRUSH AND LIMBS SHALL BE AT LEAST 3 FEET IN LENGTH.

# LARGE WOOD STRUCTURE CROSS SECTION

NTS



CEDAR CREEK FLOODPLAIN RECLAMATION  
LOLO NATIONAL FOREST – SUPERIOR, MONTANA



# Past Project Photos



## Cedar Creek Road Realignment and LWD Project 2015 Phase 1

Large Wood Structures Constructed on Cedar Creek Providing Improved Habitat





## Cedar Creek large woody debris

Before and after removal of historic waste rock used for road construction and mining.





## Cedar Creek large woody debris

Site 1 - During construction with road constricting the stream and floodplain



Site 1 - Post construction. Picture taken from behind vehicle in top photograph.





## Cedar Creek large woody debris

Site 1 - Post construction. 2 years after road relocation. Floodplain has active side channel and vegetation.





## **Montana Fish, Wildlife & Parks**

3201 Spurgin Road  
Missoula, MT 59804  
Phone 406-542-5506  
E-mail [lknotek@mt.gov](mailto:lknotek@mt.gov)

June 1, 2018

Future Fisheries Improvement Program  
c/o Michelle McGree  
Montana Fish, Wildlife & Parks  
P.O. Box 200701  
1420 E. 6<sup>th</sup> Avenue  
Helena, MT 59620-0701

### **RE: 2018 Future Fisheries Funding Request for Cedar Creek Enhancement Trout Unlimited**

Dear Panel Members:

This letter is written in support of Trout Unlimited's application for stream habitat improvement funds in the Cedar Creek drainage near Superior. Specifically, funds are requested for continuation of stream enhancement work that has been underway for more than a decade by Trout Unlimited, the US Forest Service, FWP, and many other partners. This work has included fee title acquisition of more than 6 miles of riparian corridor, road relocation away from stream channels and re-establishment of riparian vegetation in several locations, fish passage enhancements, BMP upgrades, and installation of large wood to increase instream habitat complexity in numerous reaches. These improvements have been comprehensive in scope and have been implemented throughout the middle and lower stream system.

Cedar Creek supports unique fisheries values in the middle Clark Fork watershed and western Montana. This stream is considered one of the key strongholds and refugia for native trout in the Clark Fork system, which continues to justify the extensive stream restoration effort and investment in the watershed. Although this is an 'open' system with direct connection to the Clark Fork River, Cedar Creek has largely sustained a native fish community consisting of westslope cutthroat trout, bull trout, and sculpin in most reaches. Although it has been heavily impacted by mining over the past century, the stream's resilience appears to stem from an unusually cold temperature regime relative to other tributaries in the region.

The current project proposal (2018) includes components that have proven effective in adjacent stream reaches over the past 8 years: relocation of encroaching roads away from the stream channel, intensive riparian restoration, and installation of large wood (LWD) in the form of naturally functioning debris jams. Review of channel performance, project stability, riparian recovery, and habitat complexity on similar, previously implemented projects have demonstrated the effectiveness of these techniques. *However, the most relevant monitoring information relates to the direct response of fish populations to habitat improvements. Established treatment and control reaches used to evaluate recent projects in Cedar Creek indicate that habitat*



*improvements roughly double fish carrying capacity and density relative to pre-project conditions and adjacent control reaches.*

I strongly recommend granting funds for these projects for several reasons: 1) this stream and project locations are recognized as high priority sites for native trout enhancement, 2) project partners have demonstrated high quality work on numerous past projects, 3) past projects have demonstrated tangible benefits to fish populations, and 4) funds requested are a small proportion of the total project cost. In addition, the proposed project sites include public lands previously acquired for the purpose of fisheries enhancement and stream protection.

Please give this application strong consideration and feel free to call me if you have questions or are interested in more detailed information about this stream system.

Sincerely,

A handwritten signature in cursive script, appearing to read "Ladd Knotek".

W. Ladd Knotek

Fisheries Management Biologist